Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Supportative Material,
DELAY ACTUATORS, NUCLEAR

25X1

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

~~SECRET~~

CONFIDENTIAL

DR NO. 600

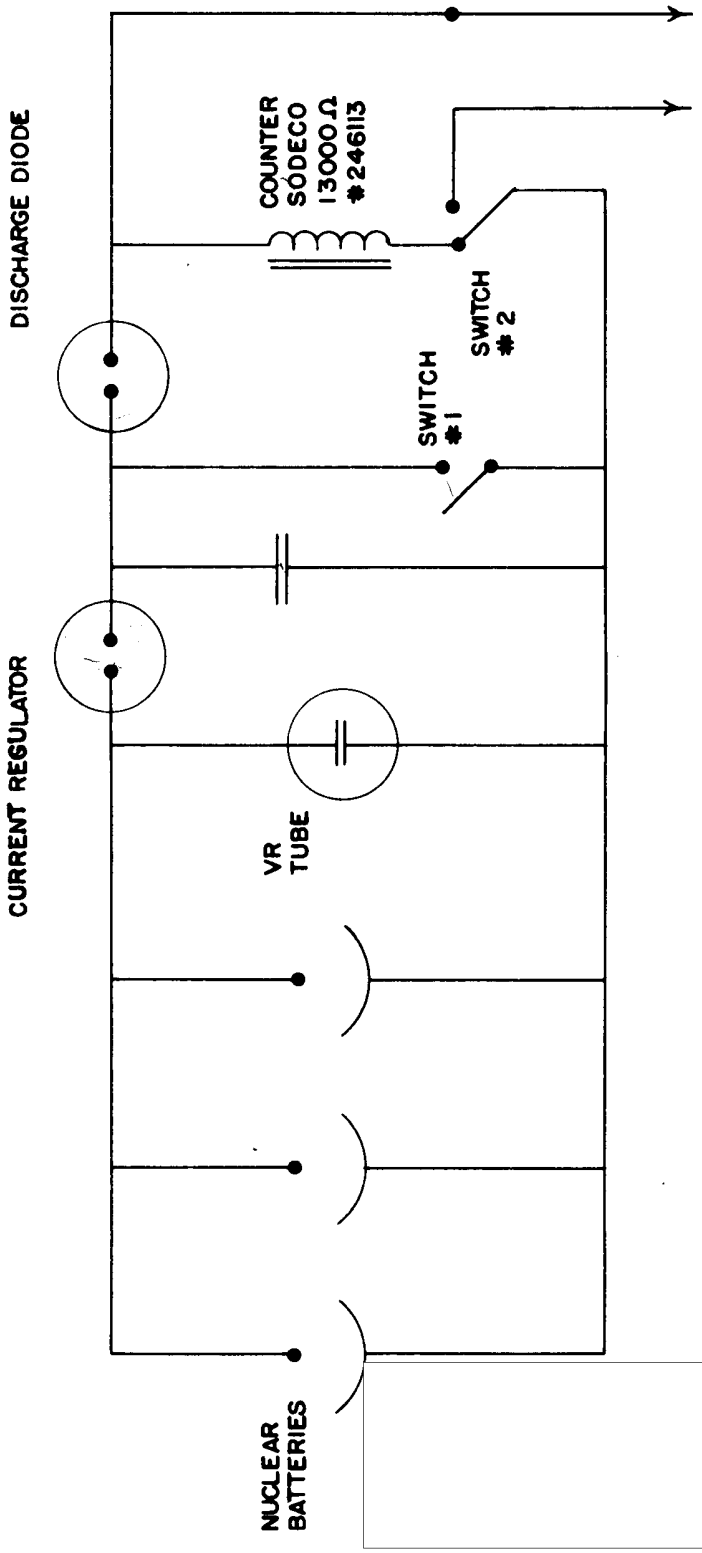



FIG 2-32 TIMER CIRCUIT

25X1

~~SECRET~~

CONFIDENTIAL

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

# Type TCeZ4PE...

## Mode d'emploi

L'appareil TCeZ4PE.. est un compteur d'impulsions à présélection. Au moment où le nombre d'impulsions choisi au préalable est atteint un contact de commutation est actionné.

Electro-aimant de comptage

Connexions 1 et 2, actionnés par des impulsions rectangulaires de tension $V_{1-2}$ conformément à la plaquette indicatrice. Variation de la tension nominale permise: ± 15 %.

Exécution pour max. 10 imp./sec.

L'électro-aimant peut rester en permanence sous tension.

Durée de l'impulsion: min. 40 ms
Intervalle entre 2 imp.: min. 40 ms

Exécution pour max. 25 imp./sec.

Désignation de type: TCeZ4PE.25

Durée de l'impulsion: min. 20 ms
Intervalle entre 2 imp.: min. 20 ms

Pour des impulsions de longue durée (max. 1 minute) l'intervalle entre deux impulsions doit être au moins égal à la durée de l'impulsion.

Comptage

Le registre (1) compte en arrière en partant du nombre choisi. Le bouton (2) doit se trouver avec le trait blanc vertical.

Présélection

Interrompre l'arrivée des impulsions. Presser sur le bouton et le bloquer par rotation d'un quart de tour, le trait se trouvant alors en position horizontale.

Ouvrir le volet de protection (3) et choisir le chiffre de présélection au moyen des tambours (4). Fermer le volet, libérer le bouton par une rotation d'un quart de tour de façon que la marque reprenne sa position verticale.

Interrompre pendant l'ensemble de ces opérations l'arrivée des impulsions.

## Gebrauchsanweisung

Das Gerät TCeZ4PE.. ist ein Impulsfernzähler mit Vorwahlvorrichtung. Nach einer im voraus eingestellten Anzahl Impulsen wird ein eingebauter Umschaltkontakt betätigt.

Zählspule

Anschlüsse 1 und 2, Speisung durch rechteckige Spannungsimpulse $V_{1-2}$. (Wert gemäss Apparateschild)
Höchstzulässige Abweichung von der Normalspannung: ± 15 %.

Ausführung bis 10 Imp./Sek.

Die Zählspule darf dauernd unter Spannung bleiben.
Zählimpulsdauer: min. 40 ms
Impulsabstand: min. 40 ms

Ausführung bis 25 Imp./Sek.

Typenbezeichnung: TCeZ4PE.25
Zählimpulsdauer: min. 20 ms
Impulsabstand: min. 20 ms
Bei langer Zählimpulsdauer (zulässiges Maximum 1 Minute) muss der Impulsabstand mindestens gleich lang wie der Impuls sein.

Zählbetrieb

Das Zählwerk (1) zählt von der eingestellten Zahl aus gegen Null rückwärts. Der Bedienungsknopf (2) muss so eingestellt sein, dass der weisse Strich senkrecht steht.

Vorwahleinstellung

Eintreffen von Zählimpulsen verhindern. Knopf eindrücken und durch Viertelsdrehung verriegeln, so dass die weisse Marke horizontal zu stehen kommt.

Schutzklappe (3) nach links aufmachen und durch Drehen der Einstellräder (4) das Zählwerk auf die gewünschte Vorwahlzahl bringen.

Schutzklappe schliessen. Knopf durch Viertelsdrehung frei machen, so dass die weisse Marke wieder senkrecht zu stehen kommt.

Während dieser Einstellung darf kein Zählimpuls eintreffen.

## Instructions for use

The TCeZ4PE.. is an Impulse Counter with preselection. As soon as the preset number of impulses has been received, an auxiliary contact is operated.

Impulse Coil

This is brought out to terminals 1 and 2. The counter operates on square-topped voltage impulses $V_{1-2}$. (Value in accordance with nameplate). Permissible voltage variations: max. ± 15 %.

Execution for 10 imp./sec.

The impulse coil may remain permanently under voltage.

Duration of impulse: min. 40 ms
Duration of interval: min. 40 ms

Execution for 25 imp./sec.

Type Designation: TCeZ4PE.25
Duration of impulse: min. 20 ms
Duration of interval: min. 20 ms

In the case of long impulses (maximum permissible value 1 minute), the impulse interval must be at least as long as the impulse duration.

Normal Operating Condition

Register (1) counts backwards from the preset number. The reset knob (2) must be in the position where the white line is vertical.

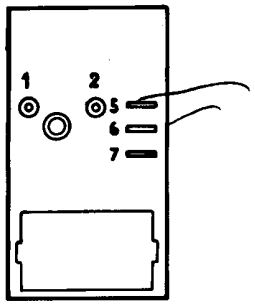
Presetting Operation

Prevent arrival of impulses. Depress reset knob and lock by giving a quarter turn to the right, so that the white mark becomes horizontal.

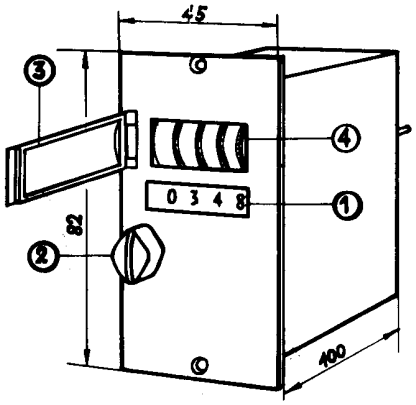
Open preset cover (3) to left, and set to the desired number by adjustment of wheels (4).

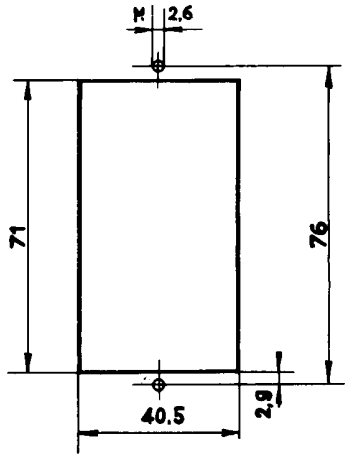
Close cover and release preset knob by giving a quarter turn to the left, so that the white mark is again vertical.

During adjustment, no impulse should be allowed to reach the counter.




Vue arrière
Rückansicht




Ouverture de montage
den Einbau

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

## Remise à la position initiale

Interrompre l'arrivée des impulsions. Dans ce cas appuyer complètement sur le bouton sans aucune rotation (ne pas le bloquer) et ensuite relacher.

## Contact de commande

Contact de commutation. Pôle commun 6. Contact fermé entre 5 et 6 et ouvert entre 6 et 7 pendant le décompte. Au moment où le nombre présélectionné est atteint 5 et 6 s'ouvrent, 6 et 7 se ferment et restent dans cette position jusqu'à la remise dans la position initiale.

## Puissance admissible pour le contact

| | |
|---|---|
| Tension alternative: | max. 250 V~<br>max. 1 A |
| Tension continue: | max. 250 V=<br>max. 0,1 A |

Pour des charges inductives utiliser toujours un pare-étincelles efficace.
Durée de la commutation: max. 40 ms

## Moment de commutation

Dans le type TCeZ4PE la commutation a lieu à la fin de l'impulsion qui amène le registre sur 0000.

Dans le type TCeZ4PEv la commutation a lieu au début de l'impulsion qui amène le registre sur 0000.

Dans le type TCeZ4PE9999v la commutation a lieu au début de l'impulsion qui amène le registre sur 9999.

En général le chiffre après la lettre E indique la position du registre pour laquelle le commutateur est actionné. Si la commutation a lieu au début de l'impulsion on utilise la lettre finale v, si elle a lieu à la fin, la lettre n.

## IMPORTANT

Pendant la remise à la position initiale et pendant le réglage de la présélection aucune impulsion ne doit parvenir au compteur.

Les appareils TCeZ4PE ont été reglés et contrôlés avec soin en usine; ils sont livrés avec capôt de protection plombé. Notre garantie ne s'applique qu'à des compteurs dont le plomb est intact.

## Rückstellung

Eintreffen von Zählimpulsen verhindern. Ist die Rückstellung auf die bereits eingestellte Zahl erwünscht, so wird der Knopf ohne Drehung vollständig eingedrückt und anschliessend losgelassen (nicht verriegeln).

## Steuerkontakt

Umschaltkontakt mit Arbeitskontakt (offen während der Zählung) zwischen Anschlüssen 6 und 7.

Ruhekontakt (geschlossen während der Zählung) zwischen Anschlüssen 5 und 6.

Gemeinsamer Polanschluss 6.

Nach Erreichen der eingestellten Anzahl Impulse wird der Kontakt umgeschaltet und bleibt in dieser Stellung bis die Rückstellung erfolgt.

## Zulässige Kontakt-Belastung

| | |
|---|---|
| Wechselspannung: | max. 250 V~<br>max. 1 A |
| Gleichspannung: | max. 250 V=<br>max. 0,1 A |

Bei induktiver Last ist eine wirksame Funkenlöschung unbedingt erforderlich.
Dauer der Umschaltung: max. 40 ms

## Zeitpunkt der Kontakt-Betätigung

Bei Typ TCeZ4PE wird am Ende des Zählimpulses, der das Zählwerk auf Stellung 0000 bringt, der Kontakt betätigt (Ende des Zählimpulses = Abfall des Zählankers).

Bei Typ TCeZ4PEv wird am Anfang des Zählimpulses, der das Zählwerk auf 0000 bringt, der Kontakt betätigt (Anfang des Zählimpulses = Anzug des Zählankers.

Bei Typ TCeZ4PE9999v gilt das Gleiche wie oben, jedoch für die Zahl 9999.

Allgemein bedeuted die Zahl zwischen E und den Buchstaben n oder v die Stellung des Zählwerks, bei welcher der Steuerkontakt betätigt wird. v bedeutet, dass der Kontakt beim Anzug, n beim Abfall des Ankers betätigt wird.

## WICHTIG

Während der Rückstellung und während der Vorwahleinstellung darf kein Zählimpuls eintreffen.

Diese Impulsfernzähler werden in unserem Werk geprüft und eingestellt. Die Lieferung erfolgt in einem plombierten Gehäuse. Beim Oeffnen des Gerätes erlischt jede Garantie unsererseits.

## Reset Operation

Prevent arrival of impulses.
To reset the counter to the preset number depress the reset knob and then release (do not turn or lock).

## Auxiliary Contact

Changeover contact: normally-open pair between terminals 6 and 7, normally-closed pair between terminals 5 and 6. Common connection 6.

After the preset number of impulses has been received, the contact changes over and remains in the new position until the counter is reset.

## Contact Ratings

| | |
|---|---|
| A.C. : | max. 250 V, max. 1 A |
| D.C. : | max. 250 V, max. 0.1 A |

With inductive loads, an effective spark suppressor is absolutely essential. Duration of contact changeover: max. 40 ms

## Exact moment of contact operation

With Type TCeZ4PE, the changeover contact is operated at the end of the impulse returning the counter to the position 0000 (End of impulse = release of counter armature).

With Type TCeZ4PEv, the changeover contact is operated at the beginning of the impulse returning the counter to the position 0000 (beginning of impulse = operation of counter armature).

With Type TCeZ4PE9999v, as above but for the position 9999.

In general the figure between E and the letters n or v indicates the position of the counter at which the changeover contact operates. v signifies that the contact is operated when the armature operates, n when the latter releases.

## IMPORTANT

During the operations of resetting and presetting it is important that no impulses should arrive at the counter.

This counter has been thoroughly tested and adjusted at our factory, and the counter sealed. Our guarantee expires automatically once the counter has been opened.

0958 NO 1005

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

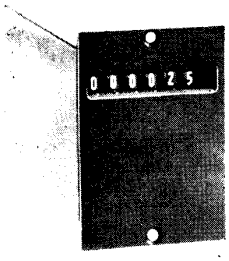
Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

# SODECO

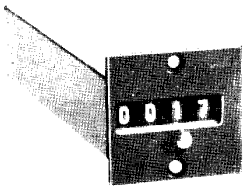
# impulse

**Recognizing the need for a new concept in impulse counting,
Sodeco of Geneva, Switzerland, developed
the counters described in this condensed catalog.**

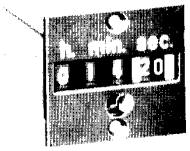
**Their unusual characteristics satisfy the exacting requirements
of modern industrial and laboratory techniques in such applications
as nuclear instruments, scalers, analysers, automated machinery,
medical and behavioral research equipment, mail and coin handling devices,
communication and traffic control devices, score board tabulators,
and many other places where rapid, accurate counting is imperative.**



electric reset



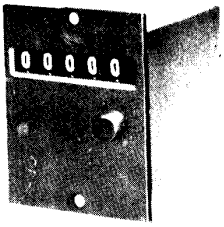
manual reset



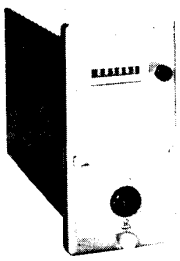
hours, minutes,
seconds indicator

monodecade

predetermining

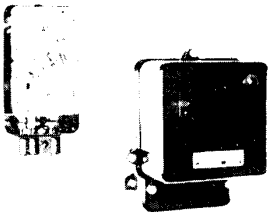


short type



printing counter

heavy duty



impulse transmitters
and adapters

**NEW YORK 36, NEW YORK**

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

# SODECO impulse

**Sodeco counters are available in a wide range of types to meet the specific requirements of many fields in which they are recognized as the standard of excellence. A few of the features contributing to this reputation include:**

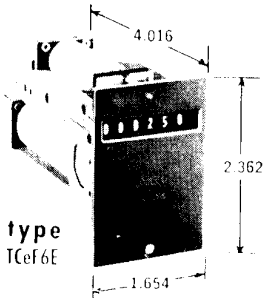
- compact design
- long operating life
- high readability
- low power consumption
- wide selection of voltages and counting speeds
- availability of auxiliary contacts
- superior workmanship
- maximum reliability at modest cost

## construction

**Counters described on these pages are designed for flush panel mounting but some, particularly the Ti Series (back cover) and a few models of the TCe Series (last column on facing page), may also be specified for surface mounting. All counters are furnished in protective housings. Counting drums are operated by electro-magnetic armature action. At each impulse, the escapement advances the unit drum by half a figure and count is completed when armature is released and returns, by spring action, to its "off" position. Hence, a quick glance shows whether the counting relay coil is energized or not.**

## electric reset

TCeF4E (4 digits)
TCeF5E (5 digits)
TCeF6E (6 digits)




type TCeF6E

Dimensions indicated are those of 6 digit counter. Counter in 4 digit frame available also with 2 or 3 digits.

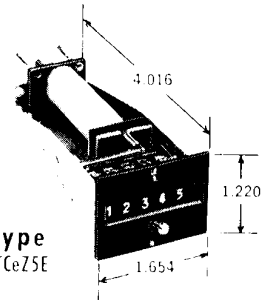
Duration of reset: 3 sec.

Reset coil may be specified for voltage other than that of counting coil and must not be energized permanently. Counting coil must not be actuated during zero reset.

Type TCeF5E and TCeF6E obtainable for sustained operation at 50 impulses per second.

## manual reset

TCeZ4E (4 digits)
TCeZ5E (5 digits)
TCeZ6E (6 digits)




type TCeZ5E

Single stroke toggle reset; also available without reset.

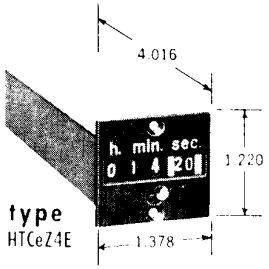
Dimensions indicated are those of 5 digit counter. Counter in 4 digit frame available also with 2 or 3 digits.

Counting coil must not be actuated during zero reset.

Type TCeZ5E and TCeZ6E obtainable for sustained operation at 50 impulses per sec.

## hour, minutes, seconds indicator

HTCeZ4E
HTCeZ5E




type HTCeZ4E

Indicates time, when pulsed each minute, second, 1/5 or 1/10 second by a suitable impulse transmitter.

Typical maximum readings:
11 hrs. 59 min. 59 sec. (5 digit)
99 min. 59 sec. 9/10 sec. (5 digit)
9 hrs. 59 min. 50 sec. (4 digit)

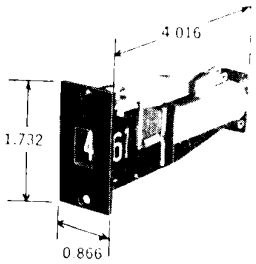
other readings available on request.

Also available with electric reset, type HTCeF.

The dimensions indicated are those of 4 digit counter.

## monodecade

ITD




Used singly, or as up to ten in series, for numerical counting, transmission of a numerical indication, remote predetermining, etc. Each decimal unit can be pulsed separately or by the immediately preceding unit.

Highly legible figures, ⅛" high, ⅛" wide.

6 contacts, one or two n.o. or n.c. at either 9 or 0, on either or both sides; non-subtracting; two sides; rating: 1 amp at 250V AC; Max. 25W at 220V DC.

| | | counting coils | | | | | | | reset coils | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 impulses per sec. | | | | 25 impulses per sec. | | | | | |
| voltages | DC | 24 | | 60 | 110 | 24 | 60 | 110 | 24 | 60 | 110 |
| resistance | ohms | 350 | 200* | 1500 | 5800 | 100 | 600 | 2400 | 75 | 500 | 1600 |
| operating current | mA | 68 | 120* | 40 | 19 | 240 | 100 | 46 | 320 | 120 | 69 |
| power demand | W | 1.6 | 2.9* | 2.4 | 2.1 | 5.8 | 6 | 5.1 | 7.7 | 7.2 | 7.6 |

*monodecade type only

### auxiliary contacts available

(TCeF and TCeZ counters only)

**contact actuated by armature of counting coil**

normally open: suffix ctz; normally closed: suffix crz

**reset operated contacts**

normally open: suffix ctz; normally closed: suffix crz; 2 contacts, one n.c. plus one n. o. +4 terminals: suffix crtz

Ratings: 1 amp at 250V AC; Max. 25W at 220V DC

**periodical contacts operated by any two of first three counting drums on 4 and 5 digit counters**

Examples: every 2nd, 5th, 10th, 20th, 50th, 100th, etc. count.

normally open, closed when armature is attracted: suffix tv
normally open, closed when armature is released: suffix tn
normally closed, open when armature is attracted: suffix rv
normally closed, open when armature is released: suffix rn

At 10 impulses per second, 2 periodical contacts may be operated simultaneously, but at 25 impulses per second, only one at a time.

All auxiliary contacts preset at factory and may not be changed in field.

Ratings: 1 amp at 250V AC; Max. 25W at 250V DC.

4 and 5 digit counters of the TCe series also available with subtracting, instead of adding, drums (suffix i), and then often specified with contacts at zero. Available with ratios other than 1 count per pulse. For example: 2 to 9 units per pulse.



Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

## electrical characteristics

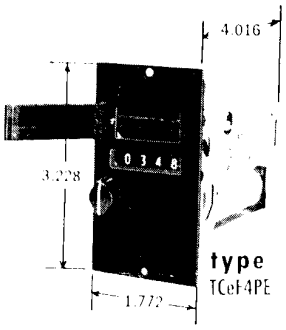
**All counters described in this catalog are available for operation on the following DC voltages: 6, 12, 24, 36, 48, 60, 110, 125, 180 and 220; from AC sources by using full-wave rectifiers. For 10 impulses per second the impulsing device may be incorporated on the AC or DC side. For 25 impulses per second it must be on the DC side. Voltage tolerance ± 15%.**

**Short type counter is available for direct operation on 110V, 60 cycles at 10 i.p.s.**

**Except for printing counters, dial figures are ⅛" high, white on black, for maximum readability.**

## predetermining

TCeZ4PE—with manual reset
TCeF4PE—with electric reset




type TCeF4PE

Permits setting to any pre-selected number from 0001 to 9999. Each incoming impulse subtracts one unit. When zero is reached, the single-pole, double-throw predetermining switch is operated. Rating: 1 amp at 250V AC or 0.1 amp at 250V DC.

Counter with electric reset may be connected for automatic repeat cycle operation.

### 10 impulses per sec.

| | | | | |
|---|---|---|---|---|
| voltages | DC | 24 | 60 | 110 |
| resistance | ohms | 130 | 1000 | 3200 |
| operating current | mA | 185 | 60 | 34 |
| power demand | W | 4.4 | 3.6 | 3.8 |

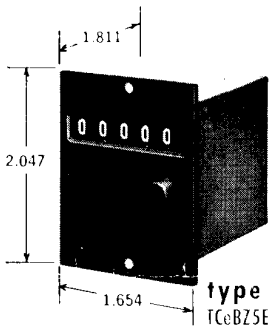
### 25 impulses per sec.

| | | | | |
|---|---|---|---|---|
| voltages | DC | 24 | 60 | 110 |
| resistance | ohms | 60 | 350 | 1000 |
| operating current | mA | 400 | 172 | 110 |
| power demand | W | 9.6 | 10.3 | 12.1 |

refer to facing page for ratings of reset coils

## short

TCeBZ4E (4 digits)
TCeBZ5E (5 digits)




type TCeBZ5E

Push button reset; also available without reset. Depth of installation greatly reduced in comparison to other types.

Model available for direct actuation by alternating current impulses at 50 or 60 cycles per second.

Dimensions indicated are those of the 5 digit counter.

Not available with auxiliary contacts.

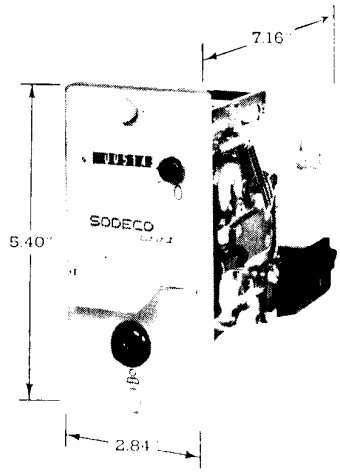
### 10 impulses per sec.

| | | DC | | | AC |
|---|---|---|---|---|---|
| voltage | | 24 | 60 | 110 | 110 |
| resistance | ohms | 560 | 2700 | 10000 | 430 |
| operating current | mA | 43 | 22 | 11 | 41 |
| power demand | W | 1.1 | 1.3 | 1.2 | VA 4.5 |

### 25 impulses per sec.

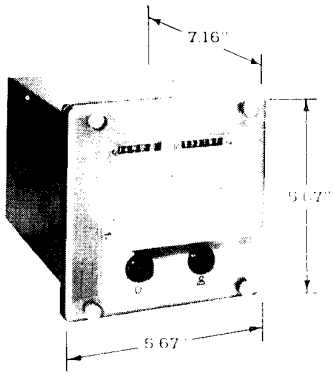
| | | | | |
|---|---|---|---|---|
| voltage | DC | 24 | 60 | 110 |
| resistance | ohms | 95 | 560 | 1800 |
| operating current | mA | 250 | 107 | 61 |
| power demand | W | 6 | 6.4 | 6.7 |

## printing counters




type 1Tp1-30

Provides printed record, as well as visual readout, of six digit figure. Printing may be accomplished manually by pushbutton or by electrical signal from remote source. Ink type printing ribbon is capable of 10000 registrations on standard cash register type paper tape. Counter incorporates electrical zero reset.




type 1Tp2-20

Permits readout and print of two channels simultaneously. Six digit number is indicated on one channel, while the second may be used to indicate date and time or other supplementary information. Counter available with synchronous motor for date and time register.

| DC voltages | 10% | 12 | 24 | 48 | 110 | 220 |
|---|---|---|---|---|---|---|
| power demand W | count | 10 | 10 | 10 | 10 | 10 |
| | print | 30 | 30 | 30 | 30 | 30 |
| | reset | 15 | 15 | 15 | 15 | 15 |

| AC* voltages | 10% | 12 | 24 | 48 | 110 | 220 |
|---|---|---|---|---|---|---|
| power demand W | count | | 12 | | 12 | 12 |
| | print | 30 | 30 | 30 | 30 | 30 |
| | reset | | 20 | | 20 | 20 |

*50 or 60 cycles
printing time: 200 ms. minimum
reset time: 500 ms. minimum



Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

# SODECO

## IMPULSE COUNTERS

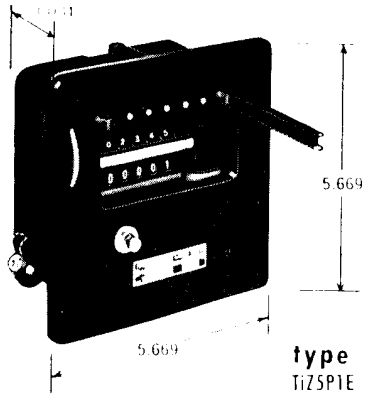
Furnished for either flush panel mounting or semi-surface mounting. For damp or dusty atmospheres, dustproof flush panel housing is available.

Maximum speed—10 impulses per second.

Electric reset requires 2 seconds. Counter must not be actuated during zero reset.

Impulse duration—make minimum 40 ms, break minimum 50 ms.

Standard counting ratio—one unit per impulse (special drums available for 2-9 units per impulse).




type TiZ5P1E

| | | DC | | | AC |
|---|---|---|---|---|---|
| voltages | | 24 | 48 | 110 | 110 |
| resistance | ohms | 250 | 1000 | 5000 | 3700 |
| operating current | mA | 96 | 48 | 22 | 30 |
| power demand | W | 2.3 | 2.3 | 2.4 | VA 3.3 |

Other DC and AC voltages on request. Reset motors (AC only) consume approx. 7 watts.

### examples:

type TiF4RE — adding and subtracting counter with electric zero reset and contact at zero.

type TiZ6E — for totalization of two circuits, with manual zero reset.

type TiZ5P1E — 5-digit predetermining counter with manual push button reset.

type TiF5P1E — 5-digit predetermining counter with electric reset.

type TiZ4RP1E — adding and subtracting predetermining counter with manual reset.

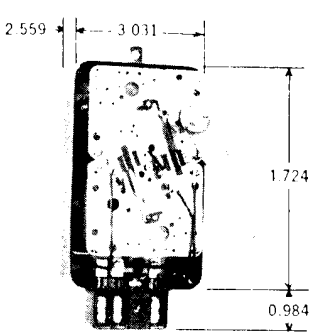
*contact ratings for above counters: 2 amp. DC, 5 amp. AC*

## IMPULSE TRANSMITTERS

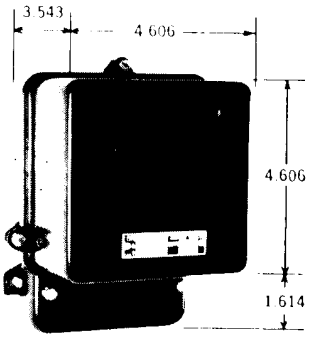
**For transforming mechanical movements, such as strokes or revolutions, into electrical impulses which operate the remote impulse counters. Impulse duration is not dependent upon speed of impelling motion. Design of transmitter is such that the contacts never remain closed.**

## IMPULSE ADAPTERS

**For the emission of optimum counting pulses independently of the quality, form or duration of the original pulse.**




type Tk7




type ZTu1

### transmitter types

type Tk2 — for rotary motion. Standard ratio between impulses and revolutions: 1 to 1. Other ratios available.

type Tk3 — for angular motion between 35° and 45°.

type Tk7 — for 2-way rotary motion.

type Tk2W — synchronous motor driven for 60, 100, 600, 1000, 1200, or 3600 impulses per hour.

type Tk2W1 — for 3600 to 36000 impulses per hour.

type Tk2Wr — adjustable in various steps of time units.

### adapters

Impulse adapters are adjustable for 15, 30 and 60 impulses per second.

Detailed dimensional and operational data sheet is available for each of the Sodeco impulse devices mentioned in this catalog. In addition, we will be pleased to supply you with suggested wiring diagrams and any assistance you may desire in their application. Complete service facilities are maintained for Sodeco products.

## sales representatives

**Alabama, Florida, Georgia, North Carolina, South Carolina and Tennessee**
Oak Ridge, Tenn., Ridge Instrument Co.
182 Talmeda Road, OAkridge 5-3333

**California**
Los Angeles 28, Paul F. Wiley Co.
2632 Silverlake Blvd., NOrmandy 3-8028
Menlo Park, Ault Associates
906 Willow Rd., DAvenport 6-1760

**Connecticut**
Stamford, Instrument Dynamics, Inc.
2368 Main Street, DRexel 8-0435

**Maine, Massachusetts, New Hampshire, Rhode Island and Vermont**
Wakefield, Mass., Instrument Dynamics, Inc.
[illegible] Street, CRystal 6-5100

**Michigan**
Detroit 21, L. H. Dickelman Company
18450 Livernois Ave., UNiversity 4-4376

**Illinois, Iowa, Indiana, Wisconsin, Minnesota,**

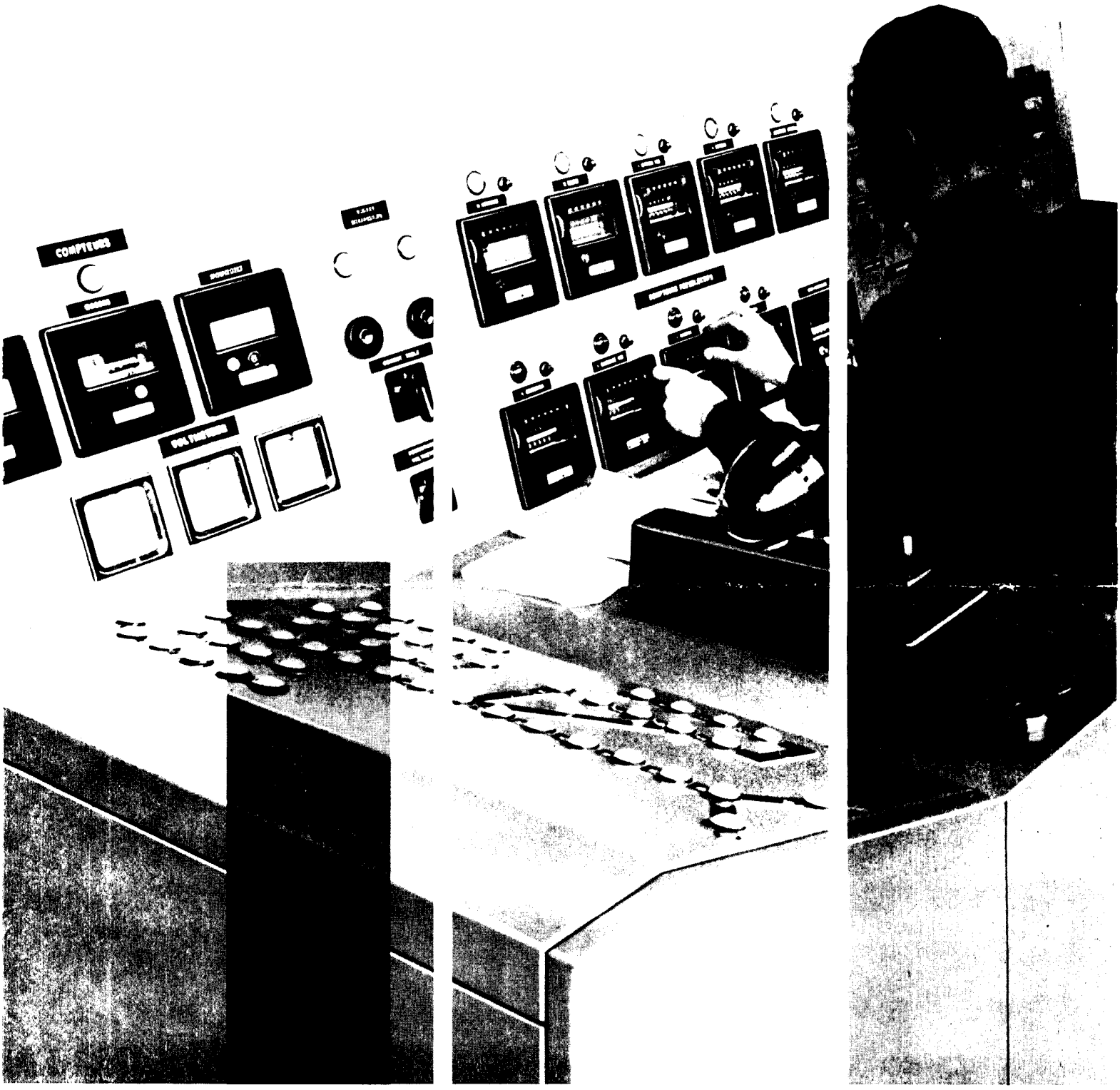
**Missouri and Kentucky**
Dearfield, Ill., Charles Walsh Associates
P. O. Box 244, IDlewood 2-5330

**Ohio**
Henger-Fairfield Co.
Canton 2, 414 4th St. NW, GL'dale 5-6833
Cincinnati 2, 124 E. 7th St., MAin 1-4749
Cleveland 13
1812 Columbus Rd., CHerry 1-1018
Columbus 15
101 N. High St., Rm. 309, CApitol 4-7510
Dayton 4, SREPCO, Inc.
214 Leo Street, BALdwin 4-3871
Toledo 2
310 Michigan St., CHerry 4-2396

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

# Impulse Counters



**count**
**measure**
**supervise**
**control**
**all kinds of**
**operations**

**SODECO**

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5



# Impulse Counters of Series Ti

In all branches of industry, scientific laboratories and testing institutes, impulse counters for remote indication are being used successfully and in steadily growing numbers for unit counting, dimensional measurements, the totalization of weights and the counting of various kinds of operations.

**Advantages of Remote Counting**

The **impulse transmitter** is mounted at the location which assures greatest counting safety and reliability and the **counter** at the location which is most convenient for the visual readout.

The triggering of an electric impulse requires little or no power.

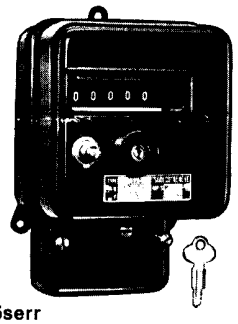
The readings of various locations can be concentrated at one point.

The same counting operation can be registered at various locations.

Counting accuracy can, if desired, be made dependent upon the simultaneous fulfillment of various conditions. Thus it can, for instance, be prevented that a winding machine continues to operate in spite of the lack of a certain kind of insulating foil whereby the wound units would be incomplete and unusable. When impulse counters are being used such problems present no difficulties, for as soon as one of the conditions is not fulfilled, the counter is stopped by means of a contact connected in series with others.

Please submit your counting problem to us. Our specialists are well versed in all types of applications and will be pleased to assist you.

## 1. Single Register Impulse Counters



TiZ5serr

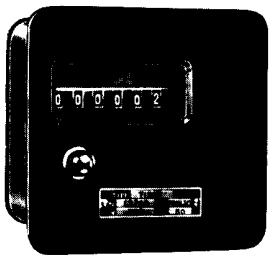
**Normal Execution** — 1 impulse = 1 counting unit, for surface mounting

| | 5 digits | 6 digits | 7 digits |
|---|---|---|---|
| without zero reset | Ti5 | Ti6 | Ti7 |
| manual zero reset | TiZ5 | TiZ6 | TiZ7 |
| electric zero reset (only for AC) | TiF5 | not available | |

**Execution for damp atmospheres (h)**

| | | | |
|---|---|---|---|
| without zero reset | Ti5h | Ti6h | Ti7h |
| manual zero reset | TiZ5h | TiZ6h | TiZ7h |
| electric zero reset (only for AC) | TiF5h | not available | |

Additional executions as for instance, for flush panel mounting, see under "Execution Possibilities", page 5.



TiZ6E

**Special Executions**

In addition to the normal execution in which 1 impulse = 1 unit, the following ratios are available:

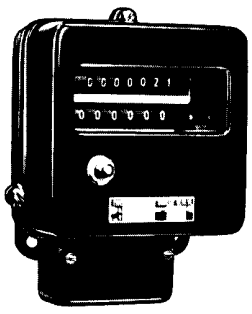
1 impulse = maximum 9 and minimum 2 units.

Example: 1 impulse = 8 units: TiZ5.1/8

Maximum 25, minimum 6 impulses per 10 units:

Example: 2 impulses = 1 unit: TiZ5.2

## 2. Impulse Counters with 2 Registers



Ti7Z6

**Normal Execution** — 1 impulse = 1 unit, for surface mounting. Both registers are actuated simultaneously: One 7-digit register without reset and a 6-digit register with manual zero reset.

Type Ti7Z6

Additional executions as for instance, for flush panel mounting, see under "Execution Possibilities", page 5.

**Special Executions**

1 impulse = maximum 9, minimum 2 units.

Example: 1 impulse = 4 units: Ti7Z6.¼

2 impulses = 1 unit: Ti7Z6.2

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5



## 3. Remote Impulse Counters with Drive Systems

Indication on one register
(both systems add)

Totalization of impulses from two different sources. **No impulses ever get lost whether they arrive simultaneously or partially overlap.**

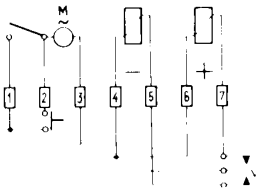
**Normal Execution**

1 impulse = 1 unit for surface mounting

| | 4 digits | 5 digits |
|---|---|---|
| without zero reset | Ti4S | Ti5S |
| manual zero reset | TiZ4S | TiZ5S |
| electric zero reset (only for AC) | TiF4S | TiF5S |

Indication on one register
(one system adds, one system subtracts)

Application for remote indication of certain conditions such as position of movable barrages, valves, control devices, level control, etc., supervision of differentials of any kind (for instance, 2 speeds, rythms of production).



TiF...R / TiF...S

**Normal Execution**

1 impulse = 1 unit, for surface mounting

| | 4 digits | 5 digits |
|---|---|---|
| without zero reset | Ti4R | Ti5R |
| manual zero reset | TiZ4R | TiZ5R |
| electric zero reset (only for AC) | TiF4R | TiF5R |

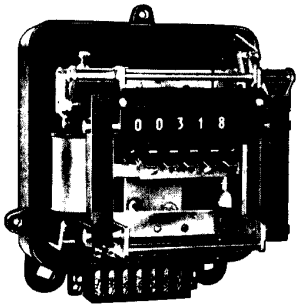
**Special Executions**

In the counters listed under A and B the following ratio proportions may be specified:

1 impulse = maximum 9, minimum 2 units.
Example: 1 impulse = 7 units: TiZ5.1/7R

Additional executions as for instance, for flush panel mounting, see under "Execution Possibilities", page 5.

## 4. Remote Impulse Counters with Set Control Contact



**TiF5S**

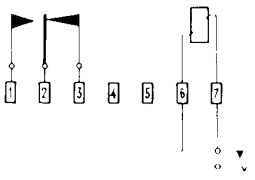
Single register impulse counter with periodical auxiliary contact operated by the counting drums each 2nd, 5th, 10th, 20th, 50th, 100th, 200th, 500th, etc. impulse (please indicate in your order).

Switching capacity of contacts:
DC to 250 V, 0.1 A  AC to 250 V, 1 A

only with 5 digits

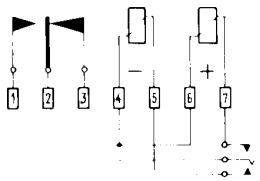
| | |
|---|---|
| without zero reset | Ti5c... |
| manual zero reset | TiZ5c... |
| electric zero reset (only for AC) | TiF5c... |

Example: Contact operation each 200 impulses: TiZ5c200



TiZ5c...

Indication on one register, with both systems adding. Remote indication of impulses originating at two different sources. **The counter accepts and registers all impulses even those which arrive simultaneously or overlap.** Fitted with single-pole double-throw contact, operating each 2nd, 5th, 10th, 50th, 100th, 200th, 500th, etc. impulse (please indicate in your order).

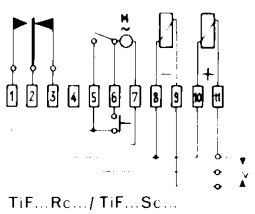


TiZ...Rc... / TiZ...Sc...

| | 4 digits | 5 digits |
|---|---|---|
| without zero reset | Ti4Sc... | Ti5Sc... |
| manual zero reset | TiZ4Sc... | TiZ5Sc... |
| electric zero reset (only for AC) | TiF4Sc... | TiF5Sc... |

Example: Contact operation each 50 impulses: TiF4Sc50

Indication on one register, with 1 system adding and 1 system subtracting. Fitted with single-pole double-throw contact actuated normally when the register is in zero position.



TiF...Rc... / TiF...Sc...

| | 4 digits | 5 digits |
|---|---|---|
| without zero reset | Ti4Rc0 | Ti5Rc0 |
| manual zero reset | TiZ4Rc0 | TiZ5Rc0 |
| electric zero reset (only for AC) | TiF4Rc0 | TiF5Rc0 |

Additional executions as for instance, for flush panel mounting, see under "Execution Possibilities", page 5.

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5



# 5. Predetermining Remote Impulse Counters

By means of these counters a contact may be actuated after a predetermined number of impulses have been received, thus emitting a signal for controlling a load. These counters are available only with 5-digit registers and with either mechanical or electric zero reset.

Each counter has two registers. The predetermined count is set up on the upper register which shows the correct figure only at the beginning and at the end of a counting run. The lower register adds the incoming impulses. When the lower register has reached the figure which had been originally preset, the upper register will have reached zero and will have actuated the single-pole double-throw contact. If additional impulses reach the counter, they are correctly registered but the contact remains unaffected.

If the originally preset number is to be repeated, it suffices to reset the counter to zero, whereby the predetermined count re-appears on the upper register.

**Normal Execution** 1 impulse = 1 counting unit, for surface mounting.

5 digits only

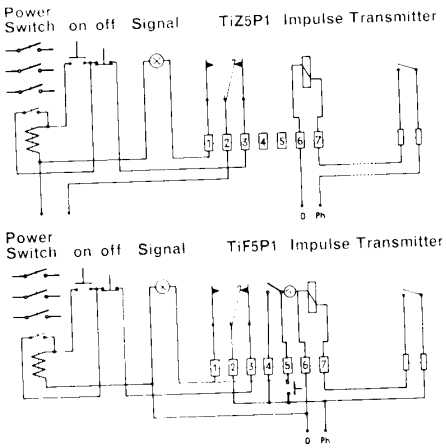
manual reset TiZ5P1

electric reset (only for AC) TiF5P1

Switching capacity of the double-throw contact:
DC to 250 V, 2 A
AC to 250 V, 5 A
Concerning other executions, as for instance, for flush mounting, see under paragraph "Execution Possibilities", page 5.

**Special Executions** 1 impulse = maximum 9, minimum 2 counting units.
Example:
1 impulse = 5 units = TiZ5.1/5P1

Wiring Diagram




for TiZ5P1




for TiF5P1

If the predetermining counter must automatically reset to the predetermined number, the reset motor must be connected in accordance with the dotted line.

Indication on one register:

**Normal Execution** 1 impulse = 1 counting unit, for surface mounting.

| | |
|---|---|
| 1 system adds | both systems add |
| 1 system subtracts | |
| with manual reset only | 4digits only |
| TiZ4RP1 | TiZ4SP1 |

Additional executions as for instance for flush panel mounting, see under "Execution Possibilities", page 5.

**Special Executions** 1 impulse = maximum 9, minimum 2 units
Example:
1 impulse = 8 units: TiZ4.1/8RP1

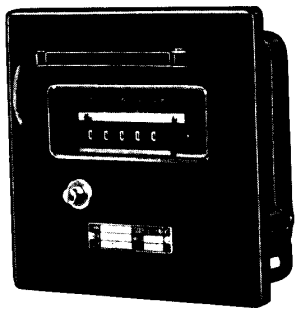
**Presetting**

(a) Reset the counter to zero by pressing the reset button or closing the electric reset circuit during a minimum of ½ sec and a maximum of 1 sec.

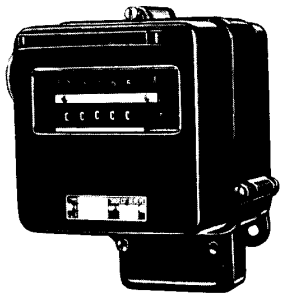
(b) Open the flap which covers the setting pegs.

(c) Preset the predetermined number on the upper register as follows: Depress successively the peg which corresponds to the digit being set and turn the knurled wheel on the left until the desired figure appears. Provision is made for accurate meshing and positioning of the figures.

(d) Cover the flap and once more reset to zero in order to correctly position the predetermining contact.



**TiZ5P1E**



**TiF5P1**

Operating Instructions
Execution Possibilities
Electrical Data
Dimensional Data

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

## Operating Instructions

**Voltage** — The operating potential corresponds to the voltage which is being measured at the terminals of the counter when continuously energized. It must normally not deviate from the nominal voltage by more than 10%.

**Nominal Current** — It should be measured with a moving coil instrument and, in the event of AC, through an instrument rectifier. Factory tolerance amounts to 15% at nominal voltage and when continuously energized.

**Counting Speed** — To 10 impulses per second.

**Impulse Duration** — The counters of the Ti series are built for a minimum impulse duration of 40 ms and a minimum break of 50 ms. Continuous impulses are acceptable.

**Working** — The counting mechanism is actuated at the release of the armature, i.e. at the end of the impulse.

**Test** — Voltages of coils are tested to ground in built-in condition. Test voltage 2000 V AC during one minute. Also the contacts are tested at 2000 V AC to ground during one minute.

**Contacts** — For DC applications spark extinguishing devices are required.

**Life Expectancy** — If correctly used reliable operation to more than 50 million impulses can be expected.

**Mounting Position** — The counters should normally be suspended or built-in vertically. Inclined or horizontal position is acceptable; however, if the angle deviates from the vertical by more than 30°, this should be mentioned in the order so that a supplementary test can be performed in the desired position.

## Execution Possibilities

(a) Counters in housings for flush panel mounting, suffix ...E (example: TiZ5E)

(b) Counters for use in damp atmospheres, suffix ...h (example: TiZ4Rh)

(c) Counters in housings for flush panel mounting and for use in damp atmospheres, suffix ...Eh (example: TiZ5P1Eh)

(d) Counter with lock for manual reset, suffix ...serr (example: TiT5serr)

(e) Counters with auxiliary armature contacts operating at each count.

Normally open contact, suffix ...cta (example: TiZ7cta)

Normally closed contact, suffix ...cra (example: TiZ6cra)

## Electrical Data

### DC

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Nominal Voltages | V= | 6 | 12 | 24 | 36 | 48 | **60** | 110 | 220 |
| Resistance | Ω | 16 | 65 | 250 | 600 | 1000 | **1500** | 5000 | **22000** |
| Nominal Current | mA | 375 | 185 | 96 | 60 | 48 | **40** | **22** | 10 |
| Power Requirement | W | 2,3 | 2,2 | 2,3 | 2,2 | 2,3 | 2,4 | 2,4 | 2,2 |

### AC

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nominal Voltages | V~ | 12 | 24 | 36 | 48 | 110 | **125** | 220 |
| Nominal Current | mA | 290 | 150 | 97 | 70 | 30 | **26** | 15 |
| Power Requirement | VA | 3,5 | 3,6 | 3,5 | 3,3 | 3,3 | **3,3** | 3,3 |

### Zero Reset Motor

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nominal Voltages | V~ | 12 | 24 | 36 | 48 | 110 | 125 | **220** |
| Power Requirement | W | 5,2 | 4,9 | 4,5 | 4,2 | 4 | **4,6** | **5,9** |

No impulses may be received while the counter is being reset to zero.

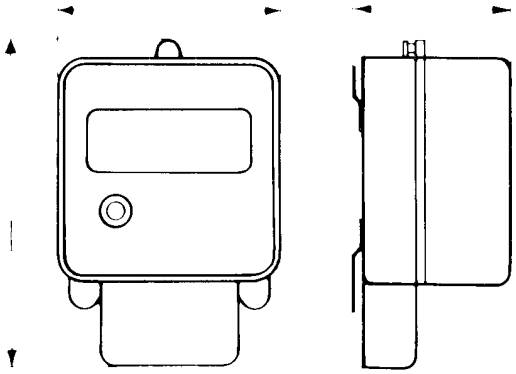
| | | |
|---|---|---|
| Contact duration for zero reset | min. | 0.5 sec |
| | max. | 1 sec |
| Duration of reset operation | | 2 secs |

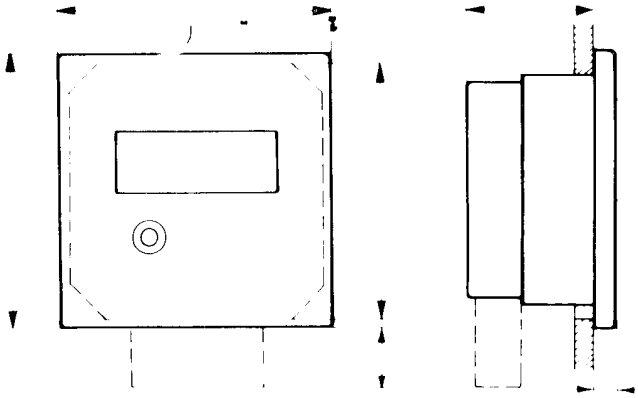
Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5



Dimensions in inches





# Surface mounting

# Panel mounting

| Nr. | A | B | C | a | b | c | d | e | e for damp rooms (h) | f |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4.134″ | 5.984″ | 2.913″ | 4.409″ | 4.409″ | 3.425″ | 4.213″ | – | – | 0.197″ |
| 20 | 5.236″ | 6.693″ | 3.189″ | 5.669″ | 5.669″ | 2.795″ | 5.315″ | 0.197″ | 1.260″ | 0.394″ |
| 30 | 5.236″ | 6.693″ | 4.449″ | 5.669″ | 5.669″ | 4.055″ | 5.315″ | 0.197″ | 1.260″ | 0.394″ |

SODECO Société des Compteurs de Genève Grand-Pré 70 Telephon (022) 33 55 00 Telex 22 333

Exclusive Representatives for U.S.A.

**Landis & Gyr, Inc.**

45 West 45th Street New York 36, N.Y.

Phone JUdson 6-4644

SODECO

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5

LANDIS & GYR, INC.

45 [illegible]
NEW YORK 36, N.Y.
Phone: JUdson 6-4644

Reset –
Z = Manual
F = Electric

# SODECO IMPULSE COUNTERS

*UNIT PRICES*

Ti SERIES – ALL VOLTAGES

| TYPE | NUMBER OF DIGITS | RESET | ALL D.C. VOLTAGES SURFACE MTG | ALL A.C. VOLTAGES SURFACE MTG | SUPPLEMENTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Electric Reset, F instead of Z | Housing for flush panel mtg. E | Housing for damp atmos. h | Housing for for flush mtg. in damp atmos. Eh | Tropical Finish | Special Ratios | Reset lock, Z only | Luminous Drums, each |
| TiZ5 | 5 | manual {electric} | 42.00 | 45.75 | 38.00 | 4.50 | 6.00 | 8.00 | 2.00 | 2.00 | 6.00 | 1.15 |
| TiZ6 | 6 | manual {see suppl.} | 48.75 | 52.50 | - | 4.50 | 6.00 | 8.00 | 2.00 | 2.00 | 6.00 | 1.15 |
| TiZ7 | 7 | manual {F} | 59.25 | 63.00 | - | 2.00 | 2.00 | 4.00 | 2.00 | 2.00 | 6.00 | 1.15 |
| Ti7Z6 | 7/6 | manual " | 71.50 | 75.25 | - | 2.00 | 2.00 | 4.00 | 2.00 | 4.00 | 6.00 | 1.15 |
| TiZ4R, TiZ4S | 4 | manual " | 100.00 | 107.50 | 29.50 | 2.00 | 2.00 | 4.00 | 4.00 | 2.00 | 6.00 | 1.15 |
| TiZ4Rc, TiZ4Sc | 4 | manual " | 116.00 | 123.50 | 29.50 | 2.00 | 2.00 | 4.00 | 4.00 | 2.00 | 6.00 | 1.15 |
| TiZ5R, TiZ5S | 5 | manual " | 105.50 | 113.00 | 29.50 | 2.00 | 2.00 | 4.00 | 4.00 | 2.00 | 6.00 | 1.15 |
| TiZ5Rc, TiZ5Sc | 5 | manual " | 121.50 | 129.00 | 29.50 | 2.00 | 2.00 | 4.00 | 4.00 | 2.00 | 6.00 | 1.15 |
| TiZ5c | 5 | manual " | 84.50 | 88.25 | 29.50 | 2.00 | 2.00 | 4.00 | 2.00 | 2.00 | 6.00 | 1.15 |
| TiZ4RP1 | 4 | manual " | 140.00 | 147.50 | - | 2.75 | 2.00 | 4.75 | 4.00 | 4.00 | 6.00 | 1.15 |
| TiZ5P1 | 5 | manual " | 96.00 | 99.75 | 29.50 | 2.75 | 2.00 | 4.75 | 3.00 | 4.00 | 6.00 | 1.15 |

## TIME INDICATORS

| TYPE | NUMBER OF DIGITS | NUMBER OF SPEC. DRUMS | ONE IMPULSE EQUALS | ALL D.C. VOLTAGES, FLUSH MTG. | SUPPLEMENTS | | |
|---|---|---|---|---|---|---|---|
| | | | | | Tropical Finish | Luminous Drums, each | Electric Reset, F instead of Z |
| HTCe Z4E | | | | | | | |
| 100 min. - 1 sec. | 4 | 1 | 1 sec. | 32.00 | 1.90 | 1.15 | 12.00 |
| 100 h - 1 min. | 4 | 1 | 1 min. | 32.00 | 1.90 | 1.15 | 12.00 |
| HTCe Z5E | | | | | | | |
| 100 min. - 0.1 sec. | 5 | 1 | 0.1 sec. | 38.50 | 1.90 | 1.15 | 12.00 |
| 100 min. - 1 sec. | 5 | 1 | 1 sec. | 38.50 | 1.90 | 1.15 | 12.00 |
| 1000 h - 1 min. | 5 | 1 | 1 min. | 38.50 | 1.90 | 1.15 | 12.00 |
| 100 min. - 0.2 sec. | 5 | 2 | 0.2 sec. | 42.50 | 1.90 | 1.15 | 12.00 |
| 10 h - 1 sec. | 5 | 2 | 1 sec. | 42.50 | 1.90 | 1.15 | 12.00 |
| 12 h - 1 sec. | 5 | 3 | 1 sec. | 46.50 | 1.90 | 1.15 | 12.00 |
| D.C. Hour Meters 3Ch6E | 6 | | | 38.00 | | | |

## QUANTITY DISCOUNTS

The above list prices are understood in U. S. Dollars, f.o.b. New York, and subject to the following quantity discounts which apply only to individual orders for counters of the same type and voltage.

1 to 19 units : list price
20 to 49 " : " " less 5%
50 to 99 " : " " " 10%

Please inquire about discounts applicable to quantities over 100 units and about OEM discount.



*All prices and discounts subject to change without notice.*

Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5
Sanitized Copy Approved for Release 2011/05/24 : CIA-RDP78-03642A000700060003-5